Effectiveness and Cost-Effectiveness for Use of Antiviral Therapy To Prevent Maternal-Infant Transmission

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Background

As neonates born from mothers with positive HBeAg may not be amenable to an hepatitis B vaccination program, the prophylactic use of Lamivudine in high-risk mothers has recently been proposed. However, the overall effectiveness and the balance between cost and benefit for such a prophylactic strategy has hardly been addressed.

Aims

We aimed to assess the effectiveness of administering Lamivudine on reducing vertical transmission and reducing its sequelae given state-of-the-world literature. Cost-effectiveness analysis, including direct and indirect costs,has been conducted for the comparison between the prophylactic strategy and the current strategy.

Methods

A Markov decision model was constructed to compare total costs and effectiveness between the prophylactic strategy and the routine strategy for average-risk and high-risk mothers. Stochastic decision analysis with different distributions for different parameters, such as Beta distribution for the efficacy of Lamivudine, was adopted to compute costs and effectiveness. Economic evaluation was performed to calculate the incremental cost-effectiveness ratio for the prophylactic administration of Lamivudine compared with a routine strategy, including active and passive immunoprophylaxis.

Results

Given literature review on the application of Lamivudine, the overall efficacy in reducing HBV DNA level was 98% and 50% in reducing vertical transmission with outcomes measured by HBsAg or Anti-HBc. No adverse effects have been reported. The incremental cost-effectiveness ratio for the prophylactic strategy versus the routine one was $350 for high-risk mothers from the health care payer perspective. The prophylactic strategy dominates the routine strategy from a societal viewpoint, regardless of average-risk or high-risk group.

Conclusions

The administration of Lamivudine to mothers with positive HBeAg is effective in reducing vertical transmission and is cost-effective compared with the routine strategy.